WHAT IS CLAIMED IS:

1. A superconducting device comprising:

a first coated superconductor, comprising:

a first superconductor layer; and

a first metal layer supported by the first superconductor layer; and

a second coated superconductor releasably bonded to the first metal layer;

wherein heating the superconducting device to at least about a predetermined temperature releases the first metal layer from the second coated superconductor without releasing the first metal layer from the first superconductor layer.

2. The superconducting device of claim 1, wherein a critical current density of the first coated superconductor remains substantially unchanged after heating the superconducting device to at least about the predetermined temperature.

3. The superconducting device of claim 2, wherein a critical current density of the second coated superconductor remains substantially unchanged after heating the superconducting device to at least about the predetermined temperature.

4. The superconducting device of claim 1, wherein

the first coated superconductor comprises:

a first non-superconductor layer supporting the first superconductor layer; and

the second coated superconductor comprises:

a second non-superconductor layer;

a second superconductor layer supported by the second non-superconductor layer; and

a second metal layer supported by the second superconductor layer.

5. The superconducting device of claim 4, wherein the first metal layer is bonded to the first superconductor layer with an electrically conducting bond.

6. The superconducting device of claim 4, wherein the first metal layer is soldered to the first superconductor layer.

7. The superconducting device of claim 1, wherein the first metal layer is bonded to the first superconductor layer using a method selected from a group consisting of vapor deposition, sonically bonding, and thermally bonding.

8. The superconducting device of claim 4, wherein each of the first and second metal layers comprise multiple layers.

9. The superconducting device of claim 8, wherein a first layer of the multiple layers comprises silver and a second layer of the multiple layers comprises copper.

10. The superconducting device of claim 9, wherein the multiple layers are thermally bonded to each other.

11. The superconducting device of claim 9, wherein the multiple layers are sonically bonded to each other.

12. The superconducting device of claim 9, wherein the multiple layers are bonded to each other with a first solder.

13. The superconducting device of claim 12, wherein the first metal layer of the first coated superconductor and the second metal layer of the second coated superconductor are releasably bonded to each other with a second solder.

14. The superconducting device of claim 13, wherein a melting temperature of the second solder is at least about 5°C lower than a melting temperature of the first solder.

15. The superconducting device of claim 13, wherein a melting temperature of the second solder is at least about 10°C lower than a melting temperature of the first solder.

16. The superconducting device of claim 13, wherein a melting temperature of the second solder is at least about 15°C lower than a melting temperature of the first solder.

17. The superconducting device of claim 13, wherein a melting temperature of the second solder is 25°C lower than a melting temperature of the first solder.

18. The superconducting device of claim 4, wherein the first non-superconductor layer comprises a substrate.

19. The superconducting device of claim 18, wherein the substrate is a nickel alloy.

20. The superconducting device of claim 19, wherein the nickel alloy comprises Ni-W.

21. The superconducting device of claim 18, wherein at least one buffer layer is deposited on the substrate.

22. The superconducting device of claim 4, wherein the first superconducting layer comprises a high temperature superconductor with a transition temperature above about 30 Kelvin.

23. The superconducting device of claim 22, wherein the first superconducting layer comprises a rare earth oxide.

24. The superconducting device of claim 4, wherein the first superconducting layer comprises $YBa_2Cu_3O_{7-x}$ where x is a number greater than 0 but less than 1.

25. The superconducting device of claim 4, wherein the first superconducting layer comprises $YBa_2Cu_3O_7$.

26. The superconducting device of claim 4, wherein the first superconducting layer comprises $YBa_2Cu_3O_{6.7}$.

27. A superconducting device comprising:

a first coated superconductor; and

a second coated superconductor releasably bonded to the first coated superconductor;

wherein subjecting the superconducting device to a solution formulated to dissolve a bond between the first and second coated superconductors releases the first coated superconductor from the second coated superconductor.

28. The superconducting device of claim 27, wherein a critical current density of the first coated superconductor remains substantially unchanged after subjecting the superconducting device to the solution.

29. The superconducting device of claim 28, wherein a critical current density of the second coated superconductor remains substantially unchanged after subjecting the superconducting device to the solution.

30. The superconducting device of claim 29, wherein the second coated superconductor is releasably bonded to the first coated superconductor with a metallic paste.

31. A method of splicing superconducting devices, comprising:

providing a first superconducting device, the first superconducting device including a first coated superconductor releasably bonded to a second coated superconductor;

providing a second superconducting device including a third coated superconductor releasably bonded to a fourth coated superconductor;

removing a first length of the second coated superconductor;

removing a complementary length of the third coated superconductor; and

joining the first and second superconducting devices to form an interface between the first coated superconductor and the fourth coated superconductor.

32. The method of claim 31, wherein the interface is electrically conductive.

33. The method of claim 31, wherein heating the first superconducting device to at least about a predetermined temperature releases the first coated superconductor from the second coated superconductor.

34. The method of claim 33, wherein heating the second superconducting device to at least about the predetermined temperature releases the third coated superconductor from the fourth coated superconductor.

35. The method of claim 33, wherein removing the first length of the second coated superconductor comprises:

heating the first superconducting device to at least about the predetermined temperature to release at least a portion of the first coated superconductor from the second coated superconductor; and

cutting the second coated superconductor from an exposed surface of the second coated superconductor to an interface between the first and second coated superconductors to release a first length from the first superconducting device.

36. The method of claim 33, wherein removing the complementary length comprises:

heating the second superconducting device to at least about the predetermined temperature to release at least a portion of the third coated superconductor from the fourth coated superconductor; and

cutting the third coated superconductor from an exposed surface of the third coated superconductor to an interface between the third and fourth coated superconductors to release a complementary length from the second superconducting device.

37. The method of claim 31, wherein applying a chemical agent to the first superconducting device releases the first coated superconductor from the second coated superconductor.

38. A superconducting device, comprising:

a first coated superconductor;

a second coated superconductor, the second coated superconductor being bonded to the first coated superconductor in a first region of the superconducting device, the second coated superconductor being unbonded to the first coated superconductor in a second region of the superconducting device; and

an electrically conducting element disposed in the second region and in electrical communication with the first and second coated superconductors.

39. The superconducting device of claim 38, wherein the second coated superconductor is releasably bonded to the first coated superconductor in the first region.

40. The superconducting device of claim 38, wherein the electrically conducting element comprises metal.

41. The superconducting device of claim 40, wherein the electrically conducting element comprises copper.

42. The superconducting device of claim 38, wherein the electrically conducting element comprises a superconducting article.

43. The superconducting device of claim 38, wherein the electrically conducting element has a cross-sectional shape selected from the group consisting of triangle, diamond, square, rectangle, hexagon, trapezoid, and any combination thereof.

44. The superconducting device of claim 38, further comprising:

a third coated superconductor; and

a fourth coated superconductor, the fourth coated superconductor being bonded to the third coated superconductor in a third region of the superconducting device, the fourth coated superconductor being unbonded to the third coated superconductor in the second region of the superconducting device.

45. The superconducting device of claim 44, wherein the electrically conducting element is in electrical communication with the third and fourth coated superconductors in the second region.

46. The superconducting device of claim 45, wherein the electrically conducting element comprises metal.

47. The superconducting device of claim 45, wherein the first coated superconductor is in contact with the third coated superconductor in the second region.

48. The superconducting device of claim 47, wherein the second coated superconductor is in contact with the fourth coated superconductor in the second region.

49. The superconducting device of claim 48, wherein in the second region the first coated superconductor has a greater length than the second coated superconductor.

50. The superconducting device of claim 45, wherein the electrically conducting element comprises:

a metal element; and

at least one superconducting article in electrical communication with the metal element.

51. The superconducting device of claim 50, wherein the at least one superconducting article is in electrical communication with the first and third coated superconductors.

52. The superconducting device of claim 51, wherein the at least one superconducting article is in electrical communication with the second and fourth coated superconductors.

53. A method of cutting a superconducting device comprising a first superconductor and a second superconductor releasably bonded to the first superconductor, the method comprising:

cutting the superconducting device so that the first coated superconductor, the second coated superconductor, and an interface between the first and second coated superconductors are exposed;

heating the first superconductor to at least about a predetermined temperature so that a first length of first coated superconductor releases from the second coated superconductor; and

removing the first length from the first coated superconductor so that an end of the first coated superconductor is offset from an end of the second coated superconductor.

54. The method of claim 53, wherein a second length of the second coated superconductor is removed from the superconducting device, the second length being less than the first length.

55. The method of claim 53, wherein a critical current density of the first coated superconductor remains substantially unchanged after heating the superconducting device to at least about the predetermined temperature.

56. The method of claim 55, wherein a critical current density of the second coated superconductor remains substantially unchanged after heating the superconducting device to at least about the predetermined temperature.

57. A superconducting device comprising:
a first coated superconductor;
a second coated superconductor; and
a metallic paste,
wherein the metallic paste releasably bonds the first coated superconductor to the second coated superconductor to form an interface therebetween.

58. The superconducting device of claim 57, wherein a critical current density of each of the first and second coated superconductors remains substantially unchanged after peeling a portion of the first superconductor away from the interface.

59. The superconducting device of claim 58, wherein the metallic paste is silver paste.

60. A method of joining a first coated superconductor to a second coated superconductor, the method comprising:
removing a first portion of a first metallic layer, the first metallic layer being releasably bonded to the first coated superconductor;
removing a complementary portion of the second coated superconductor;
removing a second portion of the first coated superconductor;
removing a complementary portion of a second metallic layer, the second metallic layer being releasably bonded to the second coated superconductor;
joining the first and second coated superconductors such that a stepped interface is formed therebetween.

61. A superconducting device comprising:
a first article comprising:
a first superconductor; and
a first metal layer releasably bonded to the first superconductor; and
a second article comprising:
a second superconductor; and

a second metal layer releasably bonded to the second superconductor,

wherein the first article is joined to the second article along a stepped interface.

62. The superconducting device of claim 61, wherein the first metal layer comprises multiple metal layers.

63. The superconducting device of claim 52, wherein the second metal layer comprises multiple metal layers.

64. The superconducting device of claim 63, further comprising a first non-superconducting layer bonded to the first coated superconductor.

65. The superconducting device of claim 63, further comprising a second non-superconducting layer bonded to the second coated superconductor.